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ABSTRACT

Erikson found sex differences in the play configurations of pre-adolescents who were given a variety of toys and blocks. Wamback, Cramer and Hogan's replications of Erikson's work revealed that sex differences of this type lack sensitivity to inter-school variation among subjects, time or locality. Two possible alternatives to Erikson's hypothesis are toy preference and spatial ability. Their influence on Erikson's task was tested with 12 year-old boys and girls from private parochial schools in the Sarasota, Florida area. After spatial aptitude was measured, the sample was divided into two groups--Replication and Plain Block. "Replication" followed Erikson's methodology exactly, and children were asked to build the scene from an exciting imaginary motion picture using a variety of toys and blocks. The second group was given the same task using only blocks. The configurations were photographed and judged for spatial function and frequency of usage of the various toys, using a revised version of Erikson's scoring system. "Replication" results generally paralleled Erikson, but several differences in the "Plain Block" condition questioned Erikson's psychosexual interpretation. Six differences had very little effect on block building in any dependent variable categories. The presence of some factors posited to be social-cultural in nature, other than those originally discussed by Erikson, seemed most significant. Data were interpreted as consistent with Erikson's psychosocial theory and discussed from this perspective. (Author)

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Sex Differences in the Play Configurations of Pre-Adolescents: A Replication and Revision

Paper presented at the meeting of the Southeastern Psychological Association, New Orleans, March 1979

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Note:

The following paper is based on the author's senior thesis and thus contains several omissions of detail such as the scoring problems. Any questions concerning any aspect of the study should be directed to the author at 35 Sutton Place, apt. 11d, New York, New York, 10022. Thank-you for your interest.

Allison Wilcox

The significance of play in diagnostic and theraputic situations has been widely recognized, and the assumption that play is a symbolic phenomenon remains central to the clinical use of play techniques. The primary concern here is with the theory of play promulgated by Erik Erikson, who has emphasized its importance as the child's means of mastering reality and coping with the conflicts which emerge in each stage of development. Erikson has outlined eight stages of development representing the social and personal development of the ego, and believes that those stages between infancy and adolescence are well represented in children's play configurations.

In a study conducted at the Institute of Child Welfare of the University of California in Berkely, California, Erikson presents data which he believes provide an illustrative example of, and support for, his theory of the symbolically revealing nature of play. In his experiment, Erikson found that, given instructions to create an exciting, imaginary, original movie scene, 468 eleven, twelve, and thirteen-year-old boys and girls constructed significantly different configurations of blocks, furniture, people, animals

and cars. Almost none of the children created specific scenes from known moving pictures, but rather built things from their own imagination which Erikson believes had relevance to their conceptual identity. Boys generally built street and outdoor scenes involving automobile accidents using wild animals, Indians, and toys which moved or represented motion. Boys were also more apt to build structures, buildings, and towers, and to surround them with moving objects while girls consistently built quiet scenes of everyday life such as home and school, most of which involved a very simple use of blocks, or configurations of people and furniture without blocks. Boys used more blocks than girls, and used them in a more varied manner. Erikson concludes from this that the "High-Low" dimension is masculine and the "Open-Closed" dimension feminine. In interpreting the data, Erikson implicates sexual maturation as the source of the differences in the configurations and finds the scenes consistent with the psychoanalytic theory of psychosexual development that the children, who are in the process of becoming aware of their sexuality, construct scenes representing their own sexual organs.

In 1974, Robert Wambach attempted to replicate Erikson's study and determine whether environmental changes could significantly affect the sex differences in the play constructions. 80 children, equally divided amongst parochial and althernative school settings, were tested according to Erikson's model. The replication verified Erikson's results, and no differences between the two sub-cultures were evident. Another replication was conducted by Pheobe Cramer and Katherine Hogan in 1975, in which two age groups were compared. Utilizing Erikson's methodology, 45 five-year-olds and 47 eleven-year-olds were tested, and their configurations examined according to a

revised version of Erikson's scoring system, including operationally defined thematic categories originally discussed by Erikson. The results for both groups were generally consistent with Erikson's although the sex difference emerged most clearly in the older group. Carmer and Hogan also rejected a social-cultural interpretation of the data and asserted that the results supported Erikson's psychosexual notion.

These studies appeared to indicate that sex differences of this type are not particularly sensitive to inter-school variation among subjects, time or locality. It was felt that the relative consistency of these results justified a re-examination of the data and a re-evaluation of the psychosexual theory in light of the current literature on sex differences. After conducting an extensive research review, two possible alternatives to Erikson's original hypothesis became evident, toy preference and spatial ability. It appears that as early as four years of age, girls given a choice of toys tend to prefer dolls, domestic toys, furniture and animals, while boys prefer blocks, cars, trains, trucks, and tools. It was felt that this preferential toy choice might be a determining factor in the content of the scenes constructed by the children in Erikson's study, as it was clear from Honzik's analysis of Erikson's data that the children differentially chose toys consistent with sex typed toy preferences exhibited in other studies such as those conducted by Rosenberg and Sutton-Smith and DeLucia. Spatial ability was implicated as a possible factor in as much as males have been found to consistently outperform females on various measures of visual-spatial aptitude, and it was concievable that some of the sex differences yielded by Erikson's task might be due to this spatial factor, particularly in the males' constructions which were dominated by complex structures and towers.

Thus, the goals of this study included an examination of the influence of these two factors, and if necessary, a revision of the psychosexual interpretation in light of the present findings.

A total of 31 twelve-year-old children were examined, 15 boys and 16 girls from two private parochial schools in the Sarasota, Florida area. All subjects were white, from middle to upper-middle class homes, and of average intelligence. Each child was first administered the Block Design sub-test of the Weschler Intelligence Scale for Children as a measure of spatial ability, and then randomly assigned to one of two groups. Children in the first group, which comprised the "Replication condition" and was composed of 8 males and 8 females, were taken to a room in which they found an assortment of wooden blocks, toy furniture, people, animals and vehicles arranged categorically in boxes next to a large desk. They were given instructions identical to those used by Erikson in which they were asked to build an exciting scene from an imaginary motion picture using any of the toys avaliable, and to tell the experimenter afterwards what the scene was about. Children in the second group, which comprised the "Plain Block condition" and was composed of 7 males and 8 females, were given only the wooden blocks and identical instructions except that they were asked to build a SET from an exciting, imaginary motion picture. Similar to Erikson's experience, none of the children built scenes from known movie pictures, or found the task childish. When the construction was complete the child's story was recorded verbatim, after which the child was complimented, thanked, and the configuration photographed.

Several difficulties arose in scoring the photographs due to ambiguities in Erikson's definitions of the categories which were too extensive to

include in this discussion. A modified scoring system was designed to incorporate the spatial form and function of the constructions into six easily distinguishable categories: Erecting, Enclosing, Channelizing, Divisions, Miscellaneous Objects, and a Units measure of complexity. In addition, the stories and photographs were scored on the twelve thematic dimensions defined by Cramer and Hogan. Two naive raters, one male and one female, scored each of the photographs and stories for spatial function and themes, and tabulated the number and types of toys used in the Replication condition scenes. Inter-rater reliability ranged from r=.87 for the Channelizing category in the Plain Block condition to r=1.00 for the Units measure in both conditions. The results of the spatial function categories were subject to a 2 x 2 analysis of covariance, using the Block Design scores as the covariate. Means tables for each of the spatial function categories, and the significance of each effect are presented on pages one and two of the handout, toy choice data on page three, and thematic data on page four. No sex differences were apparent for the covariate measure, which did not appear to have a significant effect on block building in any of the dependent variable categories. No significant effects were obtained for the categories Channelizing, Miscellaneous Objects, or Units, although a trend was noted in the Channelizing category for boys to use more structures channelizing activity when toys and blocks were available, but to use less of these than girls when only blocks were present. In the Erecting category, two significant effects were evident, one for sex and one for condition: males built more erecting structures in both conditions and both sexes built more of these when toys were absent. In the Enclosing category, males built less enclosures than females in the Replication condition, but this was reversed

in the Plain Block condition. Both girls and boys used a smaller number of divisions when given only blocks to build with, and both sexes used more of the blcoks representationally (Miscellaneous Objects, see handout) when no toys were present.

No significant sex diffferences were evident for any of the themes although several did yield significant differences across conditions. A greater percentage of females used the Open-Closed, Instrusions, Activity themes in the Replication condition, and a smaller percentage used the Passivity theme in the Replication condtion than in the Plain Block condition. In the Replication condition boys more often than girls used the High-Low, Activity, Caution Outdoors and Arrested Motion themes, while girls' themes centered primarily around Open-Closed, Interior Intrusions, and Internal Commotion themes. On the other hand, a number of reversals were present in the Plain Block condition where more boys used Open-Closed and Interior Action themes than girls, a greater percentage of whom used High-Low, Danger-Violence, Passivity and Exterior Action themes. When given a choice of toys, boys and girls tended to choose approximately the same number of dolls while the girls' choice of domestic animals exceeded that of boys who chose primarily vehicles. None of the children used any of the toy furniture or built scenes without blocks. Boys used a geater number of blocks than girls when toys were included in the configurations, but the two sexes equaled out in the number of blocks used when no toys were available.

Results in the Replication condition generally paralleled those obtained by Erikson, Cramer and Hogan, and Wambach; males built erecting and channelizing structures using blocks, vehicles, and dolls which were thematically concerned with height, danger, activity, caution outdoors and arrested motion, while girls constructed enclosing configurations including miscellaneous objects,

dolls and domestic animals which were thematically centered around closure, danger, activity, interior intrusions and internal commotion. While the consistencies between these results and those of the original study and the replications were acknowledged, it was also noted that some inconsistencies between and within the studies were manifest, indicating a fairly large degree of within sex variability, and thus calling the generalizability of a psychosexual interpretation into question.

It was felt that if the configurations were indeed spatial manifestations of a body image phenomenon, similar results would be obtained when no toys were present. This clearly was not the case. A number of reversals were apparent in the results of the Plain Block condition, where the boys' constructions became less diverse (as measured by the Units category), centered around architectural space, with a predominance of enclosures embellished with towers and miscellaneous objects and thematically involved both height and closure, activity and passivity, and exterior and interior action. Girls, however, built very diverse structures in this condition, which included erecting, channelizing, enclosing and dividing spatial functions and thematically concerned height much more than closure, danger, activity and passivity, and exterior action.

A number of conclusions were drawn from the results. First, it is clear that the phenomenon originally observed by Erikson is influenced by toy materials. The variability within sexes in both conditions of this study, but particularly in the condition designed to most closely replicate Erikson's method, and the variability between the sexes across conditions, lead to the conclusion that the constructions built by 12 year-old girls and boys do not directly symbolize the morphology of the sex organs, or represent a genital mode influence on the spatial orintation and organization of the two sexes.

Rather, it is suggested that the symbolically revealing nature of these constructions lies in a social context, consonant with Erikson's notion of social modalities, and the universal socialization pressures cited by Barry, Bacon, and Child and Whiting and Edwards, of nurturance for girls and achievement and self-reliance for boys. While the constructions may manifest certain inner, personal conflicts and feelings which are of primary concern to these children, the general spatial and thematic trend seems to suggest concerns with social-cultural role expectations. This interpretation is consonant with Erikson's theory of psychosocial development which asserts that these children are in the process of establishing a sense of personal identity consistent with social pressures to incorporate a cultural role identity. That the children's play represents an attempt to deal with social expectations is supported by the differences across the two conditions of this study. It appears that when the toys are absent, certain social constraints imposed by them are eliminated; both males and females are free to experiment with the spatial manipulation of blocks in a manner which may represent an exploration of each others roles, such that the girls' constructions might be seen as their attempt to explore autonomy concerns, while the boys attempt an examination of inner spaces consonant with nurturance and responsibility themes. While this is certainly a speculative interpretation, the social perspective also makes good sense in terms of the children's toy choices and the historical context of this study and the previous investigations of this type. This is to say that a certain amount of variability between the original study, the replications, and the present study is to be expected due to the 37 year gap between them. It is clear that role expectations have become more flexible in recent years, and it is suggested that this might

account for the girls choice of toys (animals, no furniture) which centered less around domestic concerns than in the previous studies. Additionally, it is hypothesized that the fact that both Erikson's study and the replications were conducted during war years may have substantially influenced their results, to the extent that children during such times are most likely aware of some very real threats which intensify the sex role pressures they are subject to.

Having given this interpretation, it is still possible that other factors are involved in this task. While spatial ability as measured by the Block Designs does not appear to be a significant factor in the conf.gurational differences, it cannot be ruled out entirely for reasons involving the sensitivity of this measure and its possible analytic component. Although it is not considered likely, the instructions given to the children may have "pulled" for particular types of block structures and story content, and the size of the sample may have been too small to give an accurate representation of what different children do in this situration. The most significant conclusion to be obtained from this data then, seems to be the demonstration of the presence of some factors operating in the constructions, which are herein posited to be social-cultural in nature, other than those orignally asserted as strictly biological(sexual) by Erikson. The data has been interpreted as consistent with Erikson's psychosocial theory of personality development and seems worthy of more extensive examination from this persepective.

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Data Handout

Supplement to Sex Differences in the Play Configurations of Pre-Adolescents: A Replication and Revision. Allison H. Wilcox

Means Tables and Results Summary for Spatial Function Categories*

A. Channelizing: Those constructions built of blocks which serve the function of directing space. This includes sidewalks, roads, lanes, tunnels, crossings, runways, ramps, etc.

		Condition	
		Replication	Plain Block
Sex	Females	17.86	23.88
	Males	27.13	10.27

Significance of Main Effects

Sex $p < .69$

Condition $p < .42$

S x C $p < .06$**

B. Erecting: Those independent constructions built of one or more blocks which serve the function of building, erecting, and constructing upward in space. This includes freestanding walls, buildings, towers, ruins, etc.

		Condition	
		Replication	Plain Block
Sex	Females	18.13	53.00
	Males	64.75	123.71

Significance of Main Effects

Sex $p < .04$

Condition $p < .04$

S x C $p < .44$

C. Enclosing: This category includes enclosures which are closed on four sides, although a door must be present or the interior space must in some way be visible. The emphasis here is on defining interior space and containing activity. The enclosure need not be complete. This is to say, it may have a side open or use the table space representationally, however, it should be clear that the function of the blocks utilized is to enclose a given space.

		Condition	
		Replication	Plain Block
Sex	Females	55.0 →	16.63 ↑
	Males	34.88	61.86

Significance of Main Effects

Sex $p < .42$

Condition $p < .67$

S x C $p < .03$

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*Note: The mean scores reflect proportions of each configuration utilizing each Spatial Function category as adjusted for diversity using the UNITS measure of complexity. Thus, a child with a configuration including one erecting structure and one enclosing structure recieved a score of 50 for erecting (1 erecting divided by 2 units multiplied by 100) and 50 for enclosing (1 enclosure divided by 2 units multiplied by 100).

**Note: Significant interactions (Sex x Condition) were further analyzed via F-tests for simple effects. Arrows between means indicate the significant directions of the interactions.

D. Divisions: These are blocks which divide space within a unit such as partitions within a building to indicate rooms or within a barn to indicate stalls, etc.

		Condition	
		Replication	Plain Block
Sex	Females	33.13	7.25
	Males	30.75	0

Significance of Main Effects

Sex $p < .66$

Condition $p < .01$

S x C $p < .92$

E. Miscellaneous Objects: The use of one block to indicate an object which does not serve a praticular spatial function, but rather implements the story such as a single block placed upright to indicate a person or a tree.

		Condition	
		Replication	Plain Block
Sex	Females	15.63	18.63
	Males	0	38.00

Significance of Main Effects

Sex $p < .96$

Condition $p < .27$

S x C $p < .33$

F. Units: This is a measure of the number of structures in a photograph (NOT the number of individual blocks). Any independent construction represents a single unit. Thus, a house, a sidewalk, a corral, and a schoolhouse represent four units.

		Condition	
		Replication	Plain Block
Sex	Females	3.13	3.25
	Males	3.50	1.57

Significance of Main Effects

Sex $p < .26$

Condition $p < .13$

S x C $p < .07$

Summary Data for Toy Choice by Each Sex

Toy	Mean Number Chosen by Males	Mean Number chosen by Females
Vehicles	4.88	2.13*
Domestic Animals	2.38	7.38**
Wild Animals	.63	.75
Uniformed Dolls (female)	.50	.38
Uniformed Dolls (male)	1.50	.75
Adult Family Doll (female)	.63	.37
Adult Family Doll (male)	.38	.50
Male Child Doll	.63	.37
Female Child Doll	.63	1.00

Analyzed via t-tests for independent means.

*p < .05 (one-tailed)
**p < .07 (one-tailed)

Means and Summary of Results for Chocie of Blocks by Sex and Condition

		Condition	
		Replication	Plain Block
Sex	Females	22.38	29.38
	Males	30.25	30.00

Significance of Main Effects

Sex $p < .29$

Condition $p < .39$

S x C $p < .38$

Percentage of Subjects in Each Condition-Sex Group Using Each Theme

Theme	Replication Condition Males(8)	Females(8)	Plain Block Condition Males(7)	Females(8)
High-Low	75.0	37.5	71.4	75.0
++Open-Closed	62.5	75.0	42.9	25.0*
Danger or Violence which actually occurs	75.0	75.0	28.6	37.5
++Intrusions into the Interior	25.0	62.5	0	12.5**
Activity	100.0	87.5	42.9***	37.5**
++Passivity	0	12.5	57.1***	52.5**
++Action primarily Interior	0	0	42.9	25.0
Action primarily Exterior	100.0	100.0	57.1	75.0
Caution outdoors	75.0	37.5	0****	0
++Goodness Indoors	0	0	0	0
Arrested Motion	50.0	12.5	0**	0
++Internal commotion	0	12.5	0	0

Data analyzed via Fisher's Exact Test

++Indicates themes typified as female by Cramer and Hogan (1975)

Significance levels are for differences across conditions as none of the themes significantly differentiated the sexes:

*$p < .06$ **$p < .05$ ***$p < .02$ ****$p < .005$